RAMPED – Summer 2016

Robot/Alarm Lesson Plan

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Pretest Questions	1. Describe in one sentence below what you understand by the term 'robot' 2. What are the main parts of a robot? 3. What do people do to make a robot move?
Objectives	● Define what a robot is. ● Describe the main components of a robot. ● Explain how the LEGO MINDSTORMS NXT robot can be programmed to move. ● Explain how engineers apply robotics to solve real-world problems. ● Build a simple Arduino alarm system
Catch	What is a robot? (Presentation) Today we will be talking about robots and learning how to work with robots. Clear popular culture-driven misconceptions about what robots are and what they do. Then, define what a robot is. Emphasize how engineers have used robots to make our lives easier.
Activity	1) Understanding communication with a robot. Student teams act out robot instructions and then program a LEGO NXT taskbot to go through a simple maze. Through the human and robot examples, students see that a robot's computer simply follows instructions as given, thus one must be logical and precise with programming instruction. They also see how robot sensors are used to perform movement tasks. 2) Using the Arduino microproccesorand sensors build a simple alarm system
Review	An automatic door at a grocery store is an everyday example of a robot that engineers have designed to make our lives easier. What are some ways the automatic door makes peoples' lives easier?
Assessments	● What are three things that an automatic door would need to have in order to be a robot? ● What is the output of the automatic door? ● What does the computer do? ● Complete a working Arduino alarm system

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Posttest Questions (same as pretest questions)	1. Describe in one sentence below what you understand by the term 'robot' 2. What are the main parts of a robot? 3. What do people do to make a robot move?
Standards	**Wyoming State Career & Technical Education Standards** ● **3) Critical Thinking and Problem Solving**: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate technology, tools, and resources. ● **5) Technical Proficiency and Productivity:** Students safely, ethically, and productively use existing and new technologies and systems. **International Technology and Engineering Educators Association: Technology** ● The development of technology is a human activity and is the result of individual and collective needs and the ability to be creative.
Crosscutting Concepts from NGSS	**Next Generation Science Standards: Science** ● Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem